The Types of Invasive Species Economic Impacts of Interest to Environmentalists

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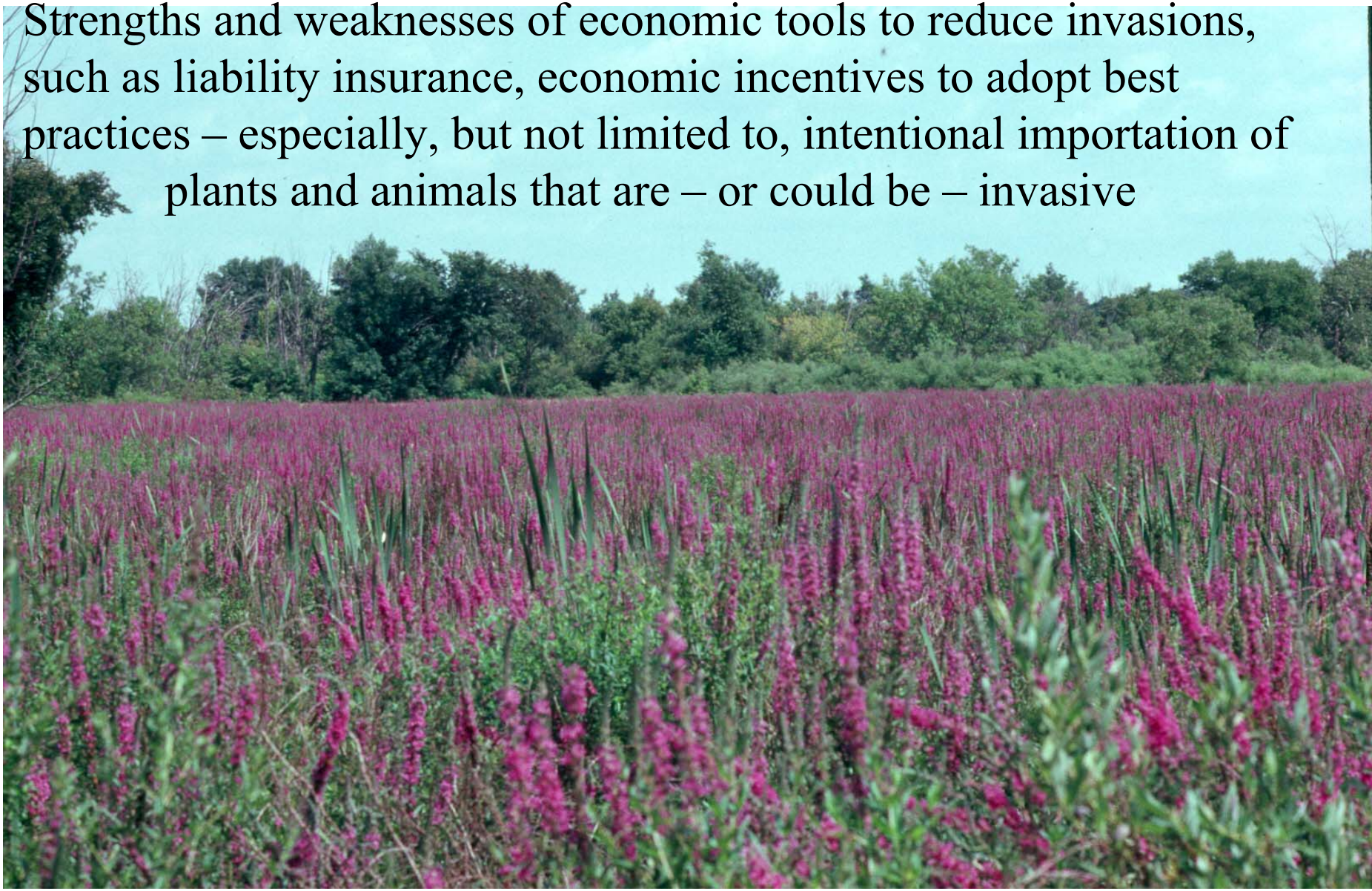
Assist decision-makers by providing rational analysis of the risk / damage resulting from invasive species & the incentives provided by existing or proposed policies

Want economic tools to help understand the causes, consequences, and economic forces behind invasions, as well as how most efficiently to allocate resources

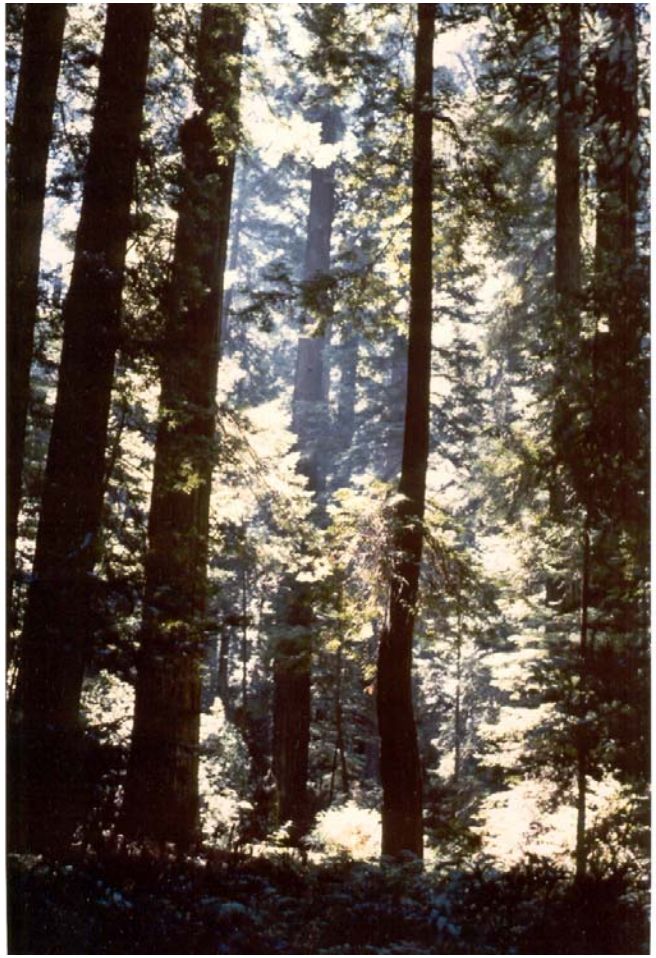
Role of economic & trade policies and "normal" economic activities in promoting invasions

Strengths and weaknesses of economic tools to reduce invasions, such as liability insurance, economic incentives to adopt best practices – especially, but not limited to, intentional importation of plants and animals that are – or could be – invasive

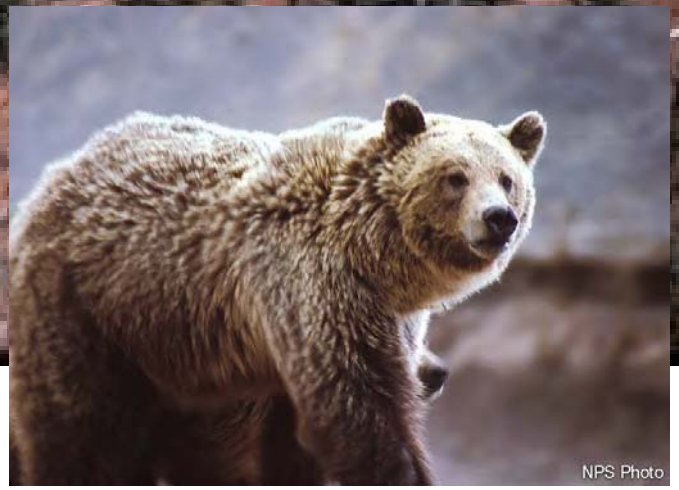


User fee charged on imports & travel to fund invasive species programs?

USDA responsibilities include



Economic valuation research & analysis that allows determination as completely as possible of the economic value of changes in environmental conditions resulting from invasive species



Include any losses of ecosystem services & any changes / reductions in biological productivity

Include such more traditional concerns as changes in value for

*** production of forest products,**

*** tourism / recreation**

Avoid re-inventing wheel; build on earlier work:

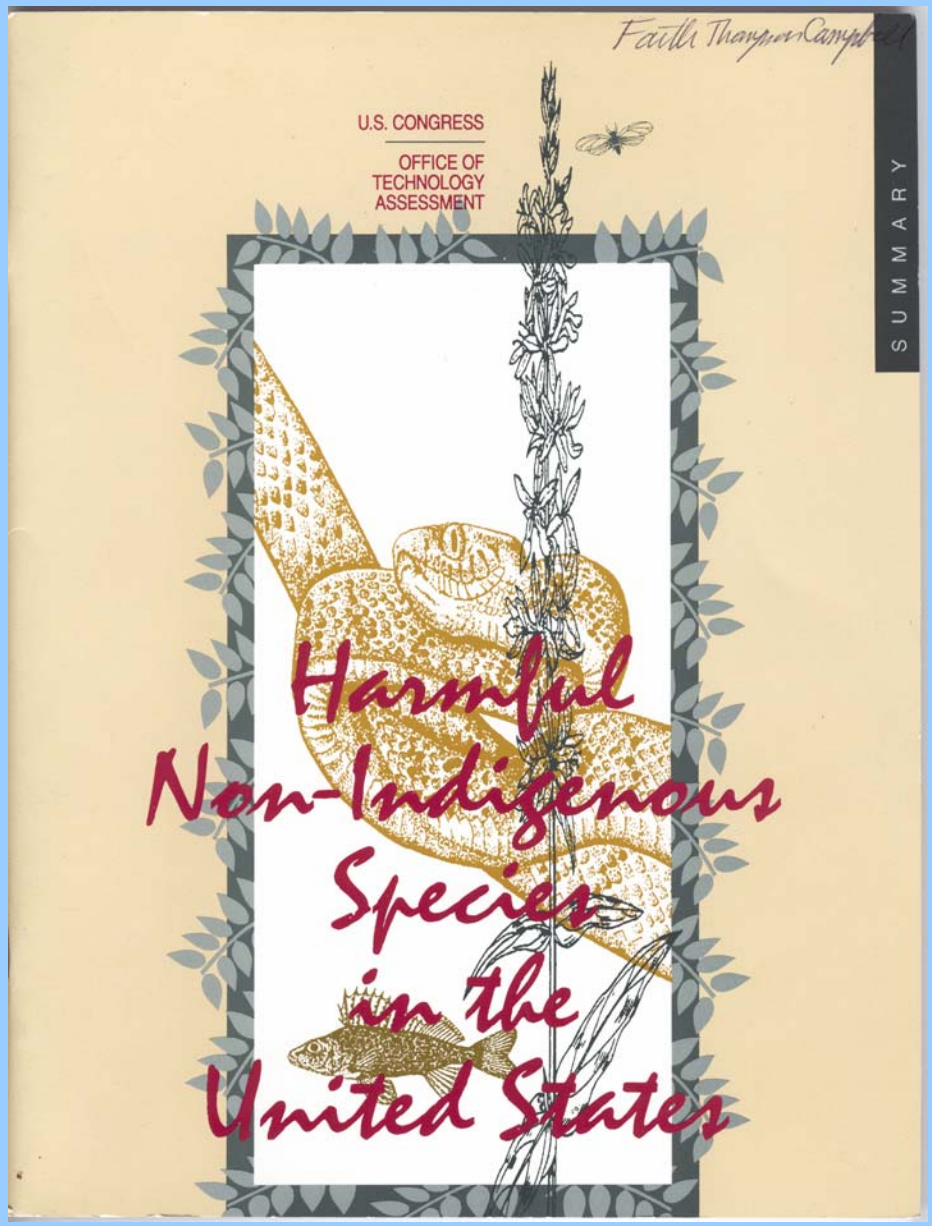
* OTA study

* GISP

* possibly Australia and New Zealand ... ?

* people who have worked on natural resource valuation questions in other contexts ...

* economic impact studies on particular species, such as ALB and Tamarisk



Interdisciplinary effort to develop an analysis framework that would be applicable to all invasive species. Test the methodology by conducting analysis / analyses of one or a group of organisms.

1. Develop scenarios for introduction and spread of organism -- including a no action scenario and one or (preferably) more program options.
2. Identify positive / negative impacts for each scenario – being careful to include the full range of ecosystem and economic impacts.
3. Classify impacts into the following 3 categories:
- Those that can be quantified in physical and monetary terms.
- Those that can be quantified only in physical terms.
- Those that cannot be quantified in either physical or monetary terms.
4. Model each scenario, incorporating all three types of impacts, using assumptions where necessary, and incorporating indications of uncertainty as much as possible.
5. Calculate economic criteria (NPV, B/C, IRR) and write sufficient narrative so that non-quantifiable impacts are made explicit.
6. Conduct a sensitivity analysis.

Kudzu (Pueraria montana var. lobata)

Yellow Starthistle (Centaurea solstitialis)

Asian Longhorned Beetle (Anoplophora glabripennis)

Formosan Termite (Coptotermes formosanus)

Red Imported Fire Ant (Solenopsis invicta Buren)

Sudden Oak Death (Phytophthora ramorum)

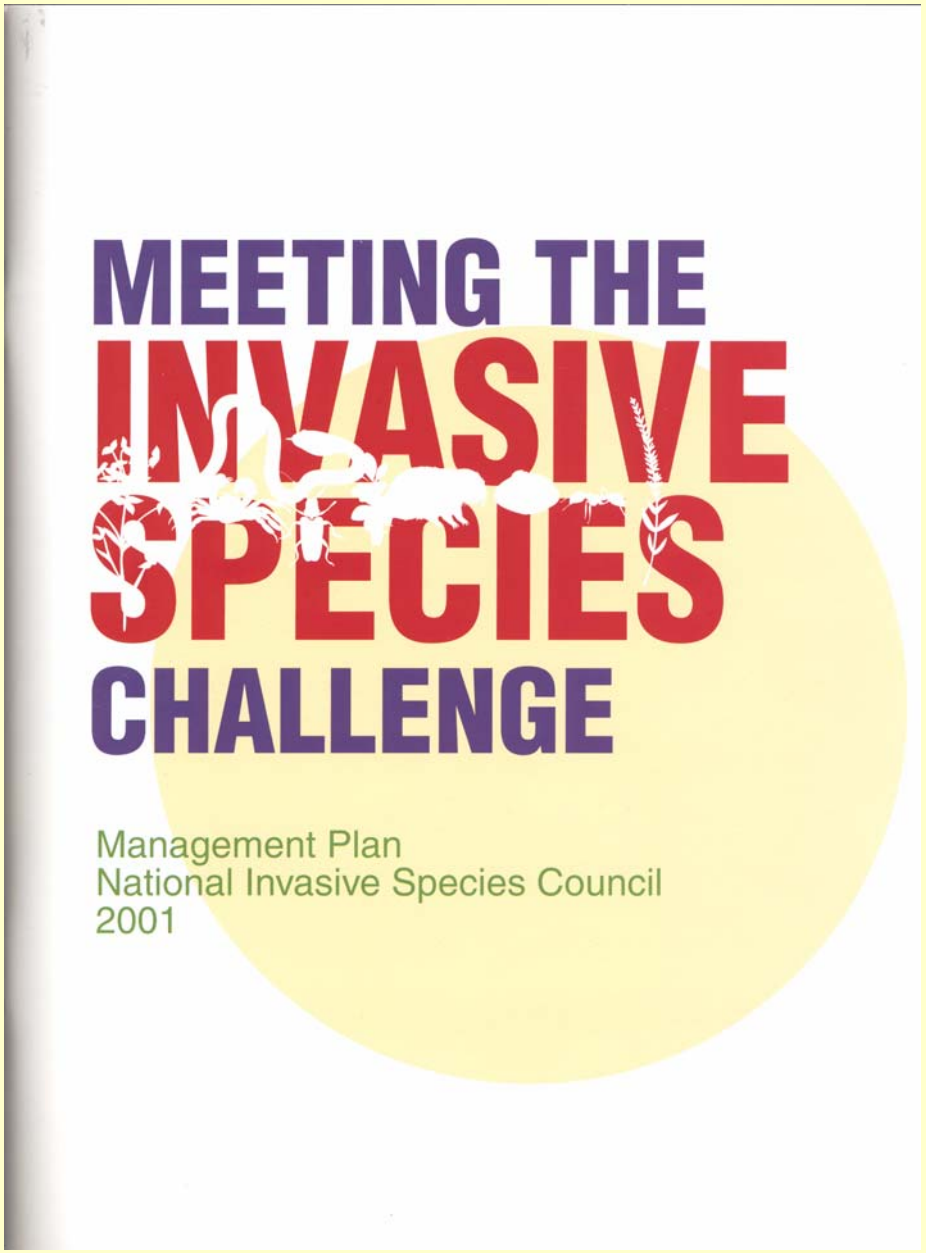
Foot and Mouth Disease Virus

White Pine Blister Rust (Cronartium ribicola)

West Nile Virus (flavivirus)

Eurasian Watermilfoil (Myriophyllum spicatum)

Salt Cedar (Tamarix spp.)



Other possible studies:

* Use economic data to predict – or detect rapidly – changes in trade patterns that change risks of introduction – so can get ahead of curve

* How can APHIS structure its programs / efforts to be effective in preventing introductions in face of flood of international trade and travel -- with added complication of inspectors having been transferred to DHS? What pros/cons of approaches that minimize reliance on inspection? What is most "efficient" balance between exclusion and ED/RR? Etc.

  – For example, economic studies evaluating efficacy of using subsidies to help shippers in Less Developed Countries adopt new technologies that will reduce risks of pest introduction – e.g., packaging made from materials other than boards (solid wood)

* Are some impacts "masked"?

  – Federal and state agencies collect little or no information about pesticide use for responding to recently established pests, so don't appear as "impacts" even when surface waters in the region contain pesticide levels exceeding government allowances

  -- Strong economic "disincentive" leading to under-reporting of pests — wish to avoid "perturbing" agricultural export market access